

CLAIMS

1. A DNA molecule comprising a DNA region containing a gene *doxA* encoding daunorubicin 14-hydroxylase and a DNA region containing at least one gene conferring daunorubicin and doxorubicin resistance.
2. A DNA molecule according to claim 1, further comprising a strong promoter.
3. A DNA molecule according to claim 2, wherein said strong promoter is *ermE**.
4. A DNA molecule according to claim 1, wherein said gene conferring daunorubicin and doxorubicin resistance is selected from the group consisting of *drrA*, *drrB* and *drrC* genes and any mixtures thereof.
5. A DNA molecule according to claim 4, wherein said genes conferring daunorubicin and doxorubicin resistance are *drrA* and *drrB* genes.
6. The DNA molecule according to claim 4, wherein said genes conferring daunorubicin and doxorubicin resistance are *drrA*, *drrB* and *drrC* genes.
7. The DNA molecule according to claim 1, wherein the region containing the gene *doxA* encoding daunorubicin 14-hydroxylase is 2.9 kb in length.
8. The DNA molecule according to claim 7, wherein the fragment containing the gene *doxA* corresponds to the *KpnI-BamHI* fragment containing the *doxA* nucleotide sequence.
9. The DNA molecule according to claim 5, wherein said region containing said

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drmA and *drmB* genes is a 2.3 kb *XbaI-HindIII* DNA fragment.

10. The DNA molecule according to claim 1, wherein said genes conferring daunorubicin and doxorubicin resistance are at least 80% identical to genes selected from the group consisting of *drmA*, *drmB* and *drmC* genes.

11. A vector containing a DNA molecule according to claim 1.

12. A vector according to claim 11 wherein said vector is a plasmid.

13. A plasmid according to claim 12, wherein said plasmid is selected from the group consisting of pIS284 and pIS287.

14. A host cell transformed or transfected with a vector according to claim 11.

15. The host cell according to claim 14, wherein said host cell does not produce daunorubicin.

16. The host cell according to claim 14, wherein said host cell is a bacterial cell which produces daunorubicin.

17. The recombinant host cell according to claim 14, wherein said host cell is a *Streptomyces* cell .

18. A process for bioconverting daunorubicin into doxorubicin, comprising the steps of:

culturing a recombinant host cell in a culture medium containing daunorubicin, wherein said host cell contains a DNA molecule comprising a DNA

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region containing a gene *doxA* encoding daunorubicin 14-hydroxylase and a DNA region containing at least one gene conferring daunorubicin and doxorubicin resistance, wherein said host cell does not produce daunorubicin, and

isolating any resulting doxorubicin from the culture medium.

19. A process for producing doxorubicin by fermentation, comprising the steps of:
culturing a recombinant host cell in a culture medium, wherein said host cell contains a DNA molecule comprising a DNA region containing a gene *doxA* encoding daunorubicin 14-hydroxylase and a DNA region containing one or more genes conferring daunorubicin and doxorubicin resistance, wherein said host cell is a bacterial cell which produces daunorubicin, and

isolating any resulting doxorubicin from the culture medium.

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